

B1 an aqueous phase, said isocyanate composition being added gradually to at least a portion of the aqueous phase and at least a portion of the blocking agent.

B2 5. (Twice Amended) Process according to Claim 1, wherein said blocking agent contains at least one labile hydrogen and wherein a pKa of reactive hydrogens is at least equal to 4 but is not greater than 14.

B3 10. (Twice Amended) Process according to Claim 1, wherein said contacting is carried out by stirring with a mixer under conditions that ensure that 90% by mass of particles in the emulsion are between 0.005 and 50 micrometers in size.

B4 13. (Twice Amended) Process according to Claim 1, further comprising recirculating the mixture, and subjecting the mixture to grinding action of a mixer during recirculation.

14. (Twice Amended) Process according to Claim 1, wherein said contacting is carried out by adding reagent(s) to at least one aqueous phase and at least a portion of the blocking agent(s).

15. (Twice Amended) Process according to Claim 1, wherein said contacting is carried out by adding reagent(s) to a medium containing at least one aqueous phase, at least a portion of the surfactant(s) and at least a portion of the blocking agent(s).

16. (Twice Amended) Process according to Claim 1, further comprising:

b) subjecting the mixture obtained in step a) to a shear (speed gradient) of greater than 1000s^{-1} ; and

B4 c) repeating step b), optionally after step a) has been repeated, until a stable emulsion is obtained whose particles have a Sauter diameter of greater than $0.1\text{ }\mu\text{m}$ and a dispersion width of less than $5\text{ }\mu\text{m}$.

17. (Twice Amended) Process according to Claim 16, wherein step c) is continued after adding the isocyanate composition.

B5 19. (Twice Amended) Process according to claim 16, wherein the mixture is recirculated in a colloidal mill.

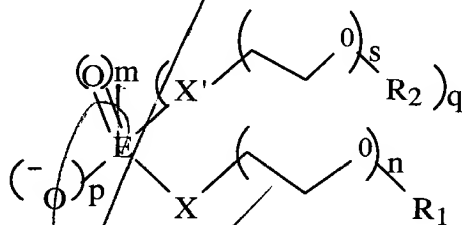
20. (Twice Amended) Process according to Claim 19, wherein the aqueous phase, to which said isocyanate composition optionally containing the surfactant and/or a solvent is added, is subjected to a first shear (speed gradient) of less than $20,000\text{s}^{-1}$, after contacting said composition with the blocking agent and before step b).

B6 24. (Twice Amended) Process according to Claim 1, wherein said surfactant is an anionic surfactant containing at least one function selected from the group consisting of aryl and/or alkyl sulphates or phosphates, aryl or alkyl phosphonate, phosphinate and sulphonate.

26. (Twice Amended) Process according to Claim 25, wherein said compound contains a hydrophilic part formed of said anionic function, said polyethylene glycol and/or polypropylene glycol chain fragment, and a lipophilic part based on a hydrocarbon-based radical.

27. (Twice Amended) Process according to Claim 26, wherein said lipophilic part comprises alkyl or aryl groups.

28. (Twice Amended) Process according to Claim 1, wherein the surfactant is an anionic surfactant comprising an anionic function corresponding to the following formula:



where q represents zero or 1;

where p represents an integer between 1 and 2, including the limits;

where m represents zero or an integer between 1 and 2, including the limits;

where X and X', which may be similar or different, represent a divalent radical containing not more than two carbon-based chain members;

where s is zero or an integer between 1 and 30, including the limits;

where n is zero or an integer between 1 and 30, including the limits;

where E is an element selected from the group consisting of carbon, and metalloid elements of atomic rank at least equal to that of phosphorus and belonging to column VB, or to chalcogens of atomic rank at least equal to that of sulphur;

38 where R_1 and R_2 , which may be similar or different, represent a hydrocarbon-based radical comprising aryls or alkyls.

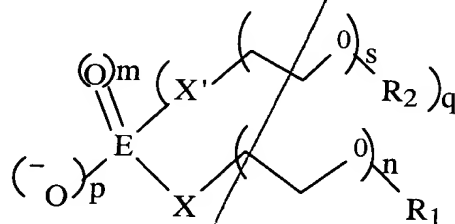
29. (Twice Amended) A method for blocking isocyanate functions on an aromatic compound while allowing aqueous emulsification of the compound obtained, comprising using an effective amount of a surfactant to form an emulsion, the surfactant comprising a compound comprising an anionic function and optionally a polyethylene glycol and/or polypropylene glycol chain fragment of at least one oxyethylene and/or oxypropylene units.

30. (Twice Amended) The method according to Claim 29, wherein the compound comprises a polyethylene glycol and/or polypropylene glycol chain fragment of at least 5 oxyethylene units.

32. (Twice Amended) The method according to Claim 31, wherein said lipophilic part comprises alkyl or aryl groups.

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33. (Twice Amended) The method according to Claim 29, wherein the anionic function of the compound corresponds to formula I below:



where q represents zero or 1;

where p represents an integer between 1 and 2 including the limits;

where m represents zero or an integer between 1 and 2 including the limits;

where X and X', which may be similar or different, represent a divalent radical containing not more than two carbon-based chain members;

where s is zero or an integer chosen between 1 and 30, including the limits;

where n is zero or an integer chosen between 1 and 30, including the limits;

where E is an element selected from the group consisting of carbon, and metalloid elements of atomic rank at least equal to that of phosphorus and belonging to column VB or to chalcogens of atomic rank at least equal to that of sulphur;

where R₁ and R₂, which may be similar or different, represent a hydrocarbon-based radical comprising aryls or alkyls.

34. (Twice Amended) The method according to Claim 29, wherein a counter-cation of the surfactant is an amine.

35. (Twice Amended) The method according to Claim 29, wherein said composition comprises an isocyanate function containing, on average, 1 to 5 isocyanate functions per molecule bearing isocyanate function(s).

36. (Twice Amended) The method according to Claim 29, wherein said composition comprises an isocyanate function containing, on average, 4/3 to 4 isocyanate functions per molecule bearing isocyanate function(s).

37. (Twice Amended) The method according to Claim 29, wherein a blocking agent is present that contains at least one labile hydrogen.

38. (Twice Amended) The method according to Claim 29, wherein a blocking agent is present that contains at least one labile hydrogen and in that a pKa of reactive hydrogens is at least equal to 2 but is not greater than 11.

39. (Twice Amended) The method according to Claim 29, wherein a pH of an aqueous phase is maintained at a value of not more than 12, throughout the reaction.

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40. (Twice Amended) The method according to Claim 29, wherein a pH of an aqueous phase is maintained at a value at least equal to the value (pKa-2) of a blocking agent, or of one of multiple blocking agents, throughout the reaction.

41. (Twice Amended) The method according to Claim 29, wherein a mass ratio between the surfactant and isocyanates is less than 20% and greater than 2%.

42. (Twice Amended) Plant for carrying out the process according to Claim 16, which comprises at least:

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- a shear means which can generate a shear rate (speed gradient) of greater than 1000 s^{-1} ;
 - means for injecting an isocyanate composition into an aqueous phase; and optionally one or more of the following means:
 - means for recirculating the aqueous phase in the form of a masked polyisocyanate emulsion;
 - means for regulating injection flow rate of the isocyanate composition into the aqueous phase;
 - means for homogenizing the emulsion;
 - means for cooling the system; and
 - means for removing the aqueous blocked polyisocyanate emulsion.

44. (Twice Amended) Plant according to Claim 42, wherein the means for injecting the polyisocyanate composition comprises:

- a vat for premixing the polyisocyanate with all or some of the surfactant and/or the solvent; and
- an inlet pipe for the polyisocyanate composition in contact with a blocking agent.

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45. (Twice Amended) Plant according to Claim 42, wherein the recirculation means comprises a recirculation loop.

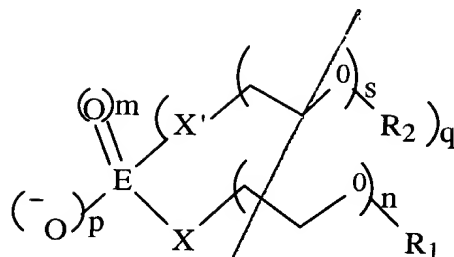
46. (Twice Amended) Composition comprising a blocked polyisocyanate emulsion, which comprises a surfactant comprising an anionic function and a polyethylene glycol and/or polypropylene glycol chain fragment of at least 1 oxyethylene and/or oxypropylene units, said surfactant being present in free form and optionally also bound to a polyisocyanate, wherein when a mean diameter of particles of the emulsion is less than 5 μm , and wherein said surfactant does not contain sulfate groups.

49. (Twice Amended) Composition according to claim 46, wherein said emulsion is made of particles having a Sauter diameter equal to or less than 5 μm and a dispersion width equal to or less than 5 μm .

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52. (Twice Amended) Composition according to Claim 51, wherein the surfactant is of the following formula:

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where q represents zero or 1;

where p represents an integer between 1 and 2, including the limits;

where m represents zero or an integer between 1 and 2, including the limits;

where X and X', which may be similar or different, represent a divalent radical containing not more than two carbon-based chain members;

where s is zero or an integer selected between 1 and 30, including the limits;

where n is zero or an integer selected between 1 and 30, including the limits;

where E is an element selected from the group consisting of carbon and metalloid elements of atomic rank at least equal to that of phosphorus and belonging to column VB or to chalcogens of atomic rank at least equal to that of sulphur; and

where R₁ and R₂, which may be similar or different, represent a hydrocarbon-based radical comprising aryls or alkyls.

54. (Twice Amended) Composition according to Claim 46, further comprising a release catalyst, which is optionally a latent catalyst.

55. (Twice Amended) Composition according to Claim 46, further comprising

at least one polyol.

56. (Twice Amended) Composition according to Claim 55, wherein said polyol is a nanolatex whose d_{80} is not more than 1 micrometer.

B15 57. (Twice Amended) Composition according to Claim 46, further comprising an isocyanate emulsion whose d_{80} is not more than 10 micrometers.

58. (Twice Amended) Composition according to Claim 55, wherein the water content is between 10 and 70%, by mass, (oil-in-water emulsion).

59. (Twice Amended) Composition according to Claim 55, wherein the content of isocyanate + emulsifier + alcohol is between 30 and 70% by mass.

B16 61. (Twice Amended) A coating, which is produced by the process of Claim 60.

Kindly add new claims 62-65 as follows:

62. (New) Process of Claim 5, wherein, when the blocking agent is a lactam, the pKa can be greater than 14.

B17 63. (New) Process of Claim 28, wherein R_1 and R_2 represent a hydrocarbon racial comprising aryls or alkyls substituted with a halogen atom.

64. (New) The method according to Claim 33, wherein R_1 and R_2 represent a hydrocarbon radical comprising aryls or alkyls substituted with a halogen atom.

65. (New) Composition according to Claim 52, wherein R_1 and R_2 represent a hydrocarbon radical comprising aryls or alkyls substituted with a halogen atom.

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow are respectfully requested.

Claims 1-10 and 12-65 are pending in the application, claim 11 having been canceled above and claims 62-65 having been added above.

By the above amendments, claims 5, 13, 28-29, 58-59 and 61 have been amended to overcome the §112 rejection. More specifically, claim 5 has been amended by deleting "with the exclusion of lactams." Claim 13 has been amended by deleting the word "grinding" before the word "mixer." Claim 28 has been amended to further define X and X' as a --divalent radical--. Support for this amendment can be found at least at page 16, lines 1-3 of the specification. Additionally, claim 28 has been further amended by deleting the word "substituted" before the words "aryls or alkyls." Claim 29 has been amended to further define the method as using an effective amount of a surfactant --to form an emulsion--. Support for this amendment can be found at least at page 11, lines 21-22 of the specification. Claims 58-59 have been amended to further define the disclosed percentages